

CLAIMS

1. A data stream that is capable of including an I picture coded by intra picture prediction coding and an inter picture prediction picture coded by inter picture prediction coding where a picture in
5 a forward direction or a backward direction in display order is referred to,

the data stream comprising sequence data and an identification signal,

wherein the sequence data is made of a combination of the
10 inter picture prediction pictures coded by referring to only a picture in the forward direction and the I picture, and

the identification signal indicates that a reordering of the coded pictures in decoding the data stream is unnecessary in the case where no picture that is coded by referring to a picture in the
15 backward direction is included in the sequence data.

2. The data stream according to Claim 1,

wherein the data stream is capable of including a forward prediction B picture, a backward prediction B picture, a P picture
20 and the I picture,

the forward prediction B picture is the picture coded by inter picture prediction coding where up to two pictures for each block is referred to, the two pictures belonging to pictures in the forward direction ,

25 the backward prediction B picture is the picture coded by inter picture prediction coding where up to two pictures for each block is referred to, the two pictures belonging to pictures including at least a single picture in the backward direction,

the P picture is the picture coded by inter picture prediction
30 coding where a single picture that belongs to pictures in the forward direction is referred to for each block, and

the sequence data is made of the I picture, the forward

prediction B picture and the P picture.

3. The data stream according to Claim 2,
wherein the inter picture prediction pictures include the
5 backward prediction B picture, and
the identification signal indicates that the reordering of the
pictures is necessary in the case where the backward prediction B
picture is included in the sequence data.

10 4. The data stream according to Claim 1,
wherein the data stream is capable of including a forward
prediction P picture, a backward prediction P picture and the I
picture,
the forward prediction P picture is the picture coded by inter
15 picture prediction coding where a single picture that belongs to
pictures in the forward direction is referred to for each block,
the backward prediction P picture is the picture coded by
inter picture prediction coding where a single picture is referred to
for each block, the single picture belonging to pictures including at
20 least a single picture in the backward direction, and
the sequence data is made of the I picture and the forward
prediction P picture.

5. The data stream according to Claim 4,
25 wherein the inter picture prediction pictures include the
backward prediction P picture, and
the identification signal indicates that the reordering of the
pictures is necessary in the case where the backward prediction P
picture is included in the sequence data.

30 6. The data stream according to one of Claims 1, 2, 3, 4 and 5,
wherein the identification signal is the data indicating delay

time between time when a picture has decoded and time when the decoded picture has displayed and indicates that the reordering of pictures is unnecessary in the case where the delay time is set at "0".

5

7. The data stream according to one of Claims 1, 2, 3, 4 and 5, wherein the identification signal is data indicating a largest difference, which is caused by the reordering of pictures, between a decoding order and a display order, and indicating that the reordering of pictures is unnecessary in the case where the largest difference is set at "0".

10

8. A computer-readable data recording medium for recording a data stream according to one of Claims 1, 2, 3, 4, 5, 6 and 7.

15

9. A coding method for coding pictures using an I picture to be coded by intra picture prediction coding and an inter picture prediction picture to be coded by inter picture prediction coding where a picture in the forward direction or in the backward direction in display order from a picture to be coded is referred to, comprising the steps of:

20

receiving an instruction indicating that coding is performed using pictures made of the I picture and the inter picture prediction picture coded by referring to only a picture in the forward prediction direction;

25

outputting an identification signal indicating that a reordering of pictures is unnecessary in the case of receiving the instruction; and

coding the combination of pictures in display order together with the identification signal without the reordering.

30

10. The coding method according to Claim 9,

wherein the coded inter picture prediction pictures are capable of including a forward prediction B picture, a backward prediction B picture and a P picture, the forward prediction B picture being coded by inter picture prediction coding where up to
5 two pictures that belong to pictures in the forward direction is referred to for each block, the backward prediction B picture being coded by inter picture prediction coding where up to two pictures for each block is referred to, the two pictures belonging to pictures including at least a single picture in the backward direction and the
10 P picture being coded by referring to a single picture in the forward direction for each block, and

the instruction indicates that coding is performed using a combination of the forward prediction B pictures, the I picture and the P picture.

11. The coding method according to Claim 9,

wherein the coded inter picture prediction pictures are capable of including a forward prediction P picture to be coded by inter picture prediction coding where a single picture that belongs
20 to pictures in the forward direction is referred to for each block and a backward prediction P picture to be coded by inter picture prediction coding where a single picture that belongs to pictures including at least a single picture in the backward direction is referred to for each block, and

25 the instruction indicates that coding is performed using a combination of the forward prediction P pictures and the I picture.

12. The coding method according to one of Claims 9, 10 and 11,

wherein the identification signal is the data indicating delay
30 time between time when a picture has decoded and time when the decoded picture has displayed and indicates that the reordering of pictures is unnecessary in the case where the delay time is set at

"0".

13. The coding method according to one of Claims 9, 10 and 11,
wherein the identification signal is data indicating a largest
5 difference, which is caused by the reordering of pictures, between
a decoding order and a display order, and indicating that the
reordering of pictures is unnecessary in the case where the largest
difference is set at "0".

10 14. A decoding method for decoding an I picture and an inter
picture prediction coding picture, the I picture being coded by intra
picture prediction coding and the inter picture prediction coding
picture being coded by inter picture prediction coding where a
15 picture in a forward direction or in a backward direction in display
order are referred to, comprising steps of:

receiving an identification signal indicating that a reordering
of pictures is unnecessary and sequence data that is coded in
display order;

20 decoding the sequence data in receiving order according to
the identification signal; and

outputting the decoded pictures in decoding order so as to
be displayed.

15. A decoding method for decoding an I picture and an inter
25 picture prediction coding picture, the I picture being coded by intra
picture prediction coding and the inter picture prediction coding
picture being coded by inter picture prediction coding where a
picture in a forward direction or in a backward direction in display
order are referred to, comprising steps of:

30 receiving an identification signal indicating whether or not a
reordering of pictures is necessary and sequence data;

judging whether the identification signal indicates that the

reordering of pictures is necessary or the reordering of pictures is unnecessary; and

outputting the signals of the pictures by decoding the signals in receiving order in the case where it is judged that the identification signal indicates that the reordering of pictures is unnecessary, and outputting the pictures by decoding the received signals of the pictures and reordering the pictures in display order in the case where it is judged that the identification signal indicates that the reordering of pictures is necessary.

16. The decoding method according to one of Claim 14 and 15, wherein the identification signal is the data indicating delay time between time when a picture has decoded and time when the decoded picture has displayed and indicates that the reordering of pictures is unnecessary in the case where the delay time is set at "0".

17. The decoding method according to one of Claim 14 and 15, wherein the identification signal is the data indicating a largest difference, caused by the reordering of the pictures, between a decoding order and a display order and also indicating that the reordering of pictures is unnecessary in the case where the largest difference is set at "0".

18. A program for causing a computer to execute a coding method according to one of Claims 9, 10, 11, 12 and 13 or a decoding method according to one of Claims 14, 15, 16 and 17.